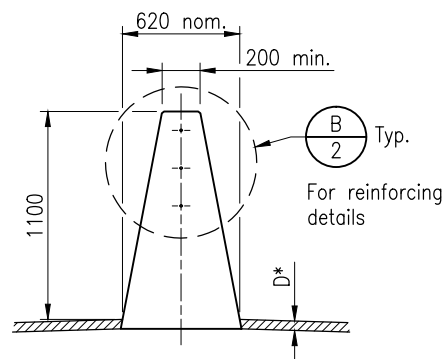
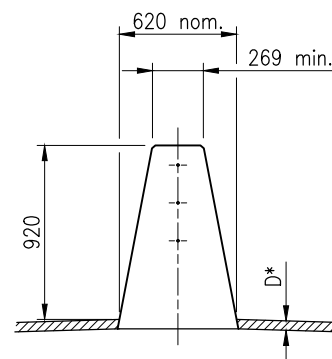


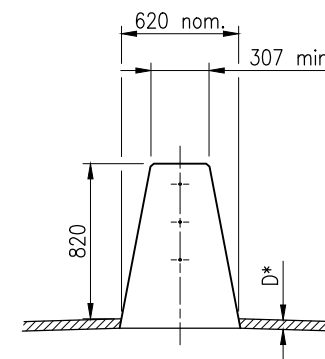
1100 WITH LIGHTING



1100 WITHOUT LIGHTING



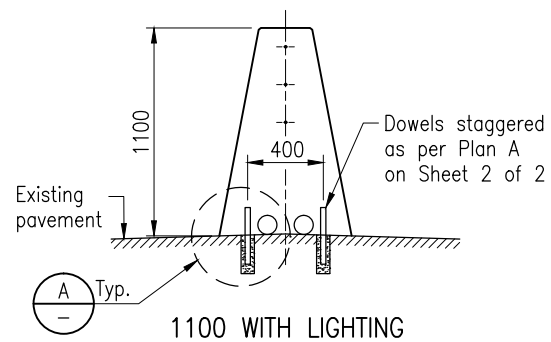
920 WITHOUT LIGHTING



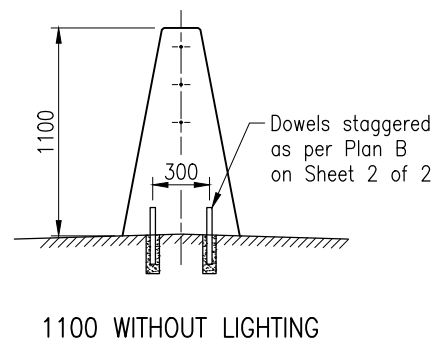
820 WITHOUT LIGHTING

CAST WITH SUPPORT*Δ

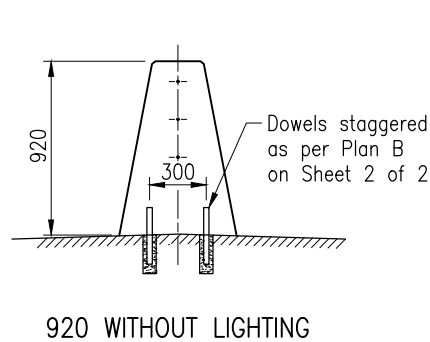
*Refer Note 6 Δ Refer Barrier Slope Detail



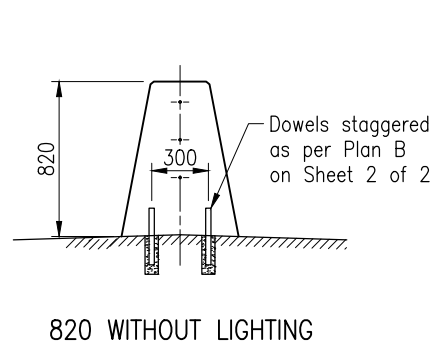
1100 WITH LIGHTING



1100 WITHOUT LIGHTING



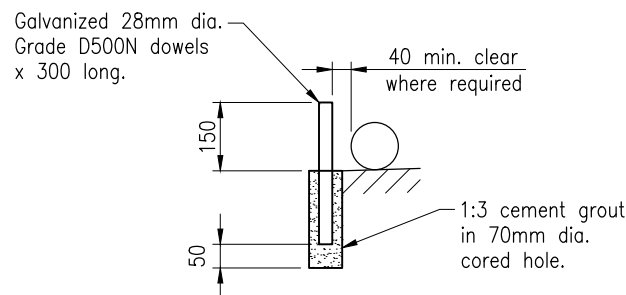
920 WITHOUT LIGHTING



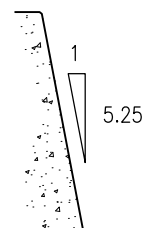
820 WITHOUT LIGHTING

CAST ON TOP OF EXISTING PAVEMENT Δ

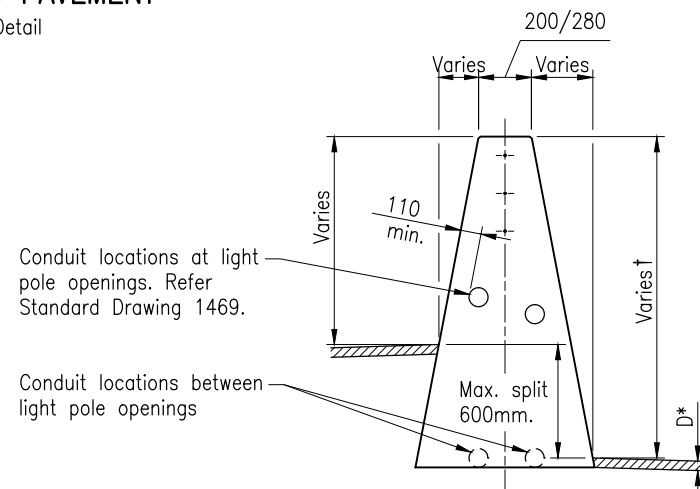
Δ Refer Barrier Slope Detail



DETAIL A



BARRIER SLOPE DETAIL (TYPICAL)



SPLIT CARRIAGEWAYS*Δ

*Refer Note 6 Δ Refer Barrier Slope Detail

NOTES:

1. CONCRETE GRADE FOR EXTRUDED BARRIERS shall be S32 fibre concrete impregnated with 50mm virgin polypropylene fibrillated fibres at the rate of 0.9kg/m³. Steel fibres shall not be permitted as an alternative.
2. LONGITUDINAL REINFORCEMENT, comprising 7 wire ordinary-12.7-1870-Relax 2 Strands to AS 4672.1 (qty. 3), shall extend for the entire length of the barrier, with 50mm cover at openings, expansion joints and at ends.
3. CRACK CONTROL JOINTS IN EXTRUDED BARRIERS are to be formed by neatly saw cutting 50mm deep into the face of the barrier. Time of saw cutting to be determined to avoid shrinkage cracking occurring but must be within 12 hours of extrusion. Joints are to be at a maximum of 4.0m centres.
4. EXPANSION JOINTS ON EXTRUDED BARRIERS shall be provided at the end of each days work. Barriers without lighting poles shall have expansion joints at 100m maximum intervals. Expansion joints shall also be provided between the extruded concrete barrier and the barrier terminal.
5. CHAMFERS for extruded barriers shall be 15mm x 15mm.
6. MINIMUM LENGTH OF CONCRETE BARRIER:

BARRIER ANCHORAGE METHOD	MINIMUM BARRIER LENGTH
Asphalt: D = 75mm Pavement: D = 100mm Compacted fill: D = 100mm	25m
Dowels (on top of pavement)	20m
Compacted fill/pavement: D = 200mm	20m

7. DOWELS shall comply with AS/NZS 4671 and hot-dipped galvanized to AS/NZS 4680.
8. BRIDGES: extruded barriers shall not be used on bridges. Individual assessment by a qualified structural engineer is required for expansion joints where ends of extruded concrete barriers abut bridges.
9. HEAVY DUTY PVC CONDUITS to exit extruded barriers into trenches, prior to barrier terminal, to avoid guardrail posts. Power and communications conduits are to comply with MRTS91.
10. DELINEATOR BRACKET: for details refer to Standard Drawing 1466.
11. BARRIER CENTRELINE to be vertical regardless of crossfall or superelevation.
12. DIMENSIONS are in millimetres unless shown otherwise.

CONTAINMENT LEVEL

The default permanent concrete barrier has a containment level rated at TL-5.

A 1100mm high single slope concrete barrier has the following characteristics:

- It is rated at TL-5 when appropriately fixed to ground (pinned or embedded to pavement) and can accommodate one 35mm thick pavement overlay.
- After several pavement overlays (i.e. more than 35mm increase in height since original installation) the barrier can no longer be considered to be a full TL-5 containment level system but it could be expected to have a containment level greater than TL-4.
- Selection of a rigid single slope concrete barrier height different to TL-5 may be determined necessary for a site due to any of the following reasons:
 1. Sight distance requirements.
 2. TL-5 containment is not required as demonstrated by site specific risk assessment. For example, low design speed, or where there is low exposure to the risk of heavy vehicle impacts.

STANDARDISED HEIGHTS FOR PERMANENT SINGLE SLOPE CONCRETE BARRIER AS 5100 may have different requirements for barriers on bridges.

Single Slope Rigid Concrete Barrier Height (mm)	Containment Level	Comments
820	TL-4 NCHRP 350 TL-3 MASH	Containment level will be reduced if pavement height increases
920	TL-4 NCHRP 350 TL-4 MASH	Containment level will be reduced if pavement height increases
1100	TL-5 NCHRP 350 TL-5 MASH	Containment level will be reduced if pavement height increases more than 35mm

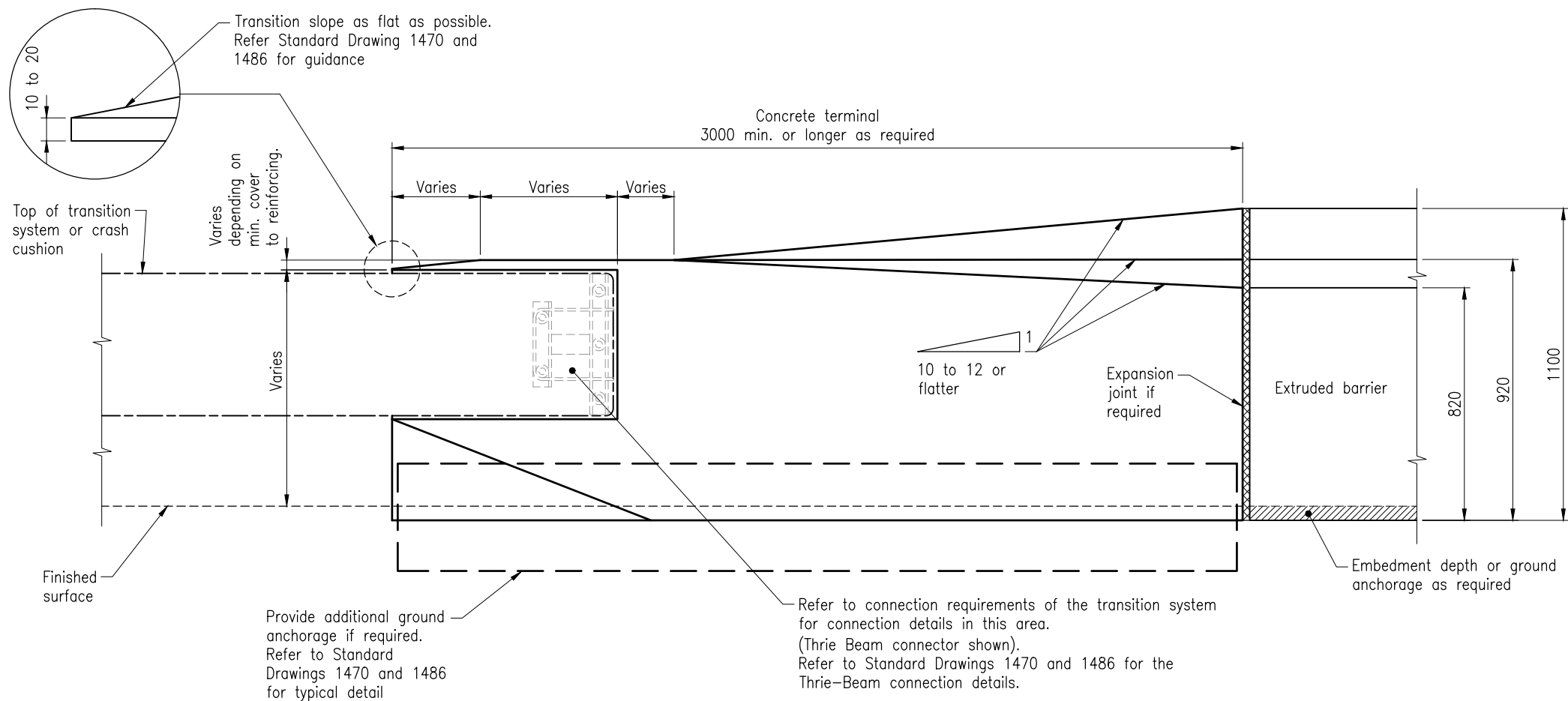
CONTAINMENT LEVEL SELECTION

Containment level selection cannot be defined prescriptively; rather it is determined using engineering judgement using information obtained from site specific risk assessments. Refer to Road Planning and Design Manual for guidance on containment level selection for each site.

DESIGN CONSIDERATIONS

- D1. SPECIAL BARRIER DESIGN is required:
- (a) on curves that have a design speed lower than the design speed on the previous geometric element by 20km/h or more.
 - (b) when designing specifically for commercial vehicles.
 - (c) where major structural pavement work is likely in the future.
 - (d) For 1100mm high barriers, height shall be no less than 1065mm (effective barrier height) after pavement overlay.
- D2. Refer to Design Criteria for Bridges and Other Structures for guidance on:
- (a) Lateral support and dimensional clearance to structures.
 - (b) Working widths at structures.
- D3. Detail to be shown on the drawings
- (a) Drainage slot details, if required.
 - (b) Drainage slot centres.

Department of Transport and Main Roads			
SINGLE SLOPE CONCRETE BARRIER		© The State of Queensland (Department of Transport and Main Roads) 2014 http://creativecommons.org/licenses/by/3.0/au	
-EXTRUDED MEDIAN BARRIER- BARRIER, REINFORCING AND EXPANSION JOINT DETAILS		A3	Standard Drawing No
SHEET 1 OF 2		Not to Scale	1468
			Date 3/14



CONCRETE TERMINAL SCHEMATIC

NOTES:

ASSOCIATED DEPARTMENTAL DOCUMENTS:

- Standard Drawings Roads Manual
- Main Roads Specifications and Technical Standards Manual
- Road Planning and Design Manual (RPDM)
- Design Criteria for Bridges and Other Structures

REFERENCED DOCUMENTS:

- Departmental Standard Drawings:
- 1466 Concrete Barriers – Delineator Bracket Details
 - 1469 Single Slope Concrete Barrier – Extruded Median Barrier – Details of Road Lighting Pole Cover Plates
 - 1470 Single Slope Concrete Barrier – Transition Between Median Barrier and Thrie Beam Guardrail
 - 1486 Single Slope Concrete Barrier – Concrete Terminal with Thrie Beam Guardrail Connection General Details

Departmental Standard Specifications:

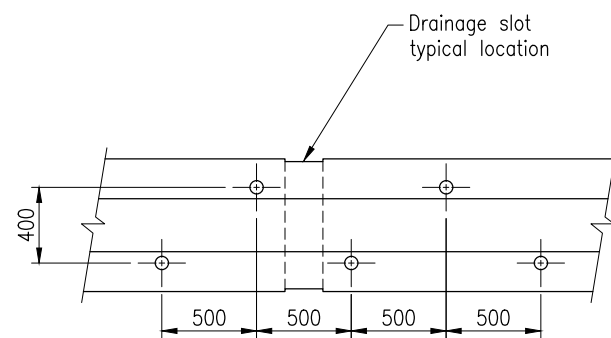
- MRTS70 Concrete
- MRTS71 Reinforcing Steel
- MRTS91 Conduits and Pits

Australian Standards:

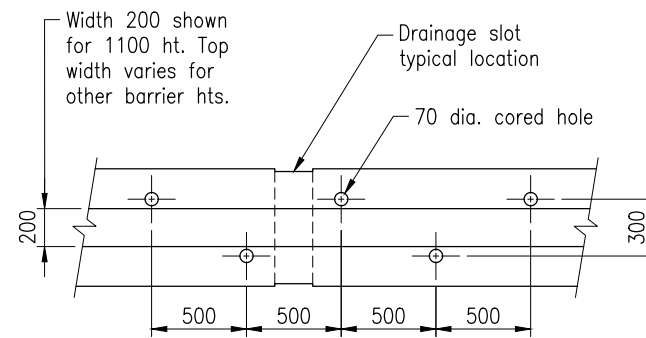
- AS/NZS 4671 Steel Reinforcing Materials
- AS/NZS 4672.1 Steel Prestressing Material – General Requirements
- AS/NZS 4680 Hot-Dip Galvanized (Zinc) Coatings on Fabricated Ferrous Articles
- AS 5100 Bridge Design

Other:

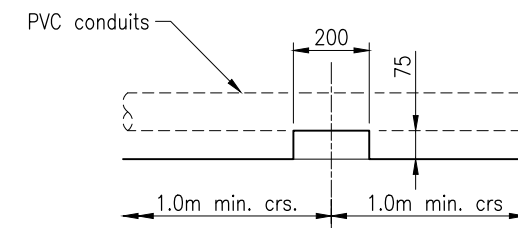
- NCHRP350 NCHRP REPORT 350 Recommended Procedures for the Safety Performance Evaluation of Highway Features
- MASH: Manual for Assessing Safety Hardware



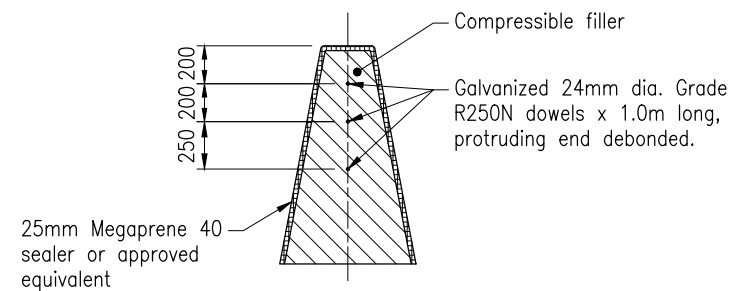
PLAN A WITH LIGHTING



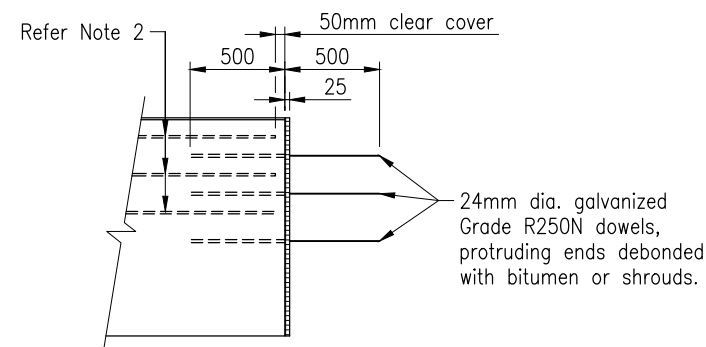
PLAN B WITHOUT LIGHTING



DRAINAGE SLOT DETAIL
If required, Refer Design Consideration D3

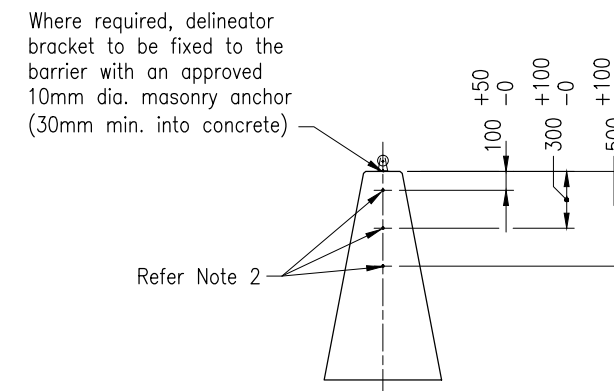


END ELEVATION



ELEVATION

EXPANSION JOINTS



LONGITUDINAL REINFORCEMENT

DETAIL B

Height and width of concrete varies

Department of Transport and Main Roads			
SINGLE SLOPE CONCRETE BARRIER			
A3	Standard Drawing No	© The State of Queensland (Department of Transport and Main Roads) 2014 http://creativecommons.org/licenses/by/3.0/au	
Not to Scale	1468	Date 3/14	
-EXTRUDED MEDIAN BARRIER- BARRIER, REINFORCING AND EXPANSION JOINT DETAILS		SHEET 2 OF 2	